Method of Test for

IDENTIFICATION OF COLLAPSIBLE SILT

LDH Designation: TR 435-74

Scope

1. This method is intended to distinguish between stable silts and collapsible silts. The color criterion established herein must be augmented by at least one of the following criteria in order to characterize a silt as collapsible:

(a) The in-place unit weight of the undisturbed silt is less than 80 lb/ft^3 (1281 kg/m^3) as determined by LDH Designation: TR 401.

(b) The maximum dry weight density is less than 104 lb/ft^3 (1666 kg/m^3) as determined in accordance with LDH Designation: TR 418. However, if the maximum dry weight density values (104 lb/ft^3 or greater) of two silt samples from neighboring areas differ by 6 percent or more, and the sample with the lower density is characterized as collapsible by the Calgon color test, it shall be considered collapsible.

(c) The sample compresses at least 15 percent in height when consolidated in accordance with a modified version of AASHO Designation: T 216. Modification requires the use of an undisturbed core oven-dried at 60 ± 3 C (140 ± 5 F) and trimmed to fit the consolidation ring. A maximum load of 8 tons ft^2 (766 kPa) is applied with a load increment ratio of two, and then the load is reduced to 4 tons/ft^2 (383 kPa), allowing the specimen to rebound. The specimen is then saturated under load and reloaded up to 16 tons/ft^2 (1532 kPa) for determining possible additional subsidence (collapse).

Apparatus

2. (a) Balance - A balance sensitive to 0.1 g.

(b) Beakers - Beakers of sufficient capacity for slaking samples.

Stock Solution

3. The term "stock solution" as used herein shall consist of 40 g of sodium hexametaphosphate (trade name Calgon) plus sufficient distilled water to make 1000 ml. This solution should not be kept longer than two weeks.

Preparation

4. Prepare approximately 1/2 lb (225 g) of minus No. 10 (2.00 mm) material in accordance with LDH Designation: TR 411.

Procedure

5. (a) After preparation the soil shall be maintained in an oven dry condition. If the soil has absorbed any moisture, oven dry in accordance with LDH Designation: TR 411 immediately prior to weighing sample. Weigh 100 g of prepared soil and place it into a beaker. Add 300 ml of stock solution to the sample and thus soak the soil for a minimum of 12 hours.

(b) Observe the color of the supernatant liquid after allowing the sample to settle for the minimum 12 hour period. A black color in the liquor is an indicator that the soil is collapsible.

Reports

6. Work sheets and reports for LDH Designation: TR 401, AASHO Designation: T 216 (modified as explained in the Scope 1 (c), above), and LDH Designation: TR 418 should be annotated appropriately as follows:

"LDH TR 435 indicates collapsible silt" or
"LDH TR 435 indicates stable silt."

Normal testing time is two days.

NOTE: In lieu of distilled water, water from municipal sources may be substituted provided:

1. *A sample has been submitted to the Materials Section and approved for this use.*
2. *A series of not less than ten samples has been run using both distilled water and tap water, and the Laboratory Engineer is assured of no variations due to the use of the tap water.*